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California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

California Energy Commission

DOCKETED

12-EPIC-01

TN 72863

MAR 28 2014

Re: Docket No. 12-EPIC-01 Second Investment Plan

Dear Ms. ten Hope,

Thank you for the opportunity to comment on the Second Investment Plan for the EPIC program. NRDC strongly supports the EPIC program,¹ which we expect to continue California's tradition of leadership in clean energy research and development, with numerous benefits for utility customers. We are pleased to see that both the CEC's proposed initiatives and the IOUs' proposed demonstration projects promise to fulfill this goal. We provide brief comments on each in turn below.

CEC Strategic Objectives

Many of the proposed projects are highly promising, so we would like to highlight just a few here for the ways in which they serve California's clean energy and carbon reduction goals:

- **Distributed Generation:** Many of the CEC's Strategic Objectives address distributed generation, and especially distributed solar PV.² Improving DG technologies and the functionality of DG on the grid will reduce DG's relative costs and improve its benefits. This will diminish concerns about the cost and logistics of integrating larger percentages of distributed generation into the

¹ See Peter Miller, *Clean Energy Research, Development, and Demonstration Program Approved*, NRDC Switchboard Sept. 13, 2013,

http://switchboard.nrdc.org/blogs/pmiller/clean_energy_research_developm.html.

² See the following CEC Strategic Objectives S3.2 Develop Integrated and Hybrid Photovoltaic Technologies and Strategies to Reduce Costs and Advance Zero Net Energy Buildings; S3.4 Advance Breakthroughs in Renewable Energy Technologies to Dramatically Increase Efficiencies, Reduce Costs, and Enable Additional Renewable Resources; S4.2 Develop Innovative Tools and Strategies to Increase Predictability and Reliability of Wind and Solar Energy Generation; S6.1 Develop Smart Inverter Capabilities to Improve Grid Operations; S8.1 Develop Customer Systems to Manage Demand Response, Renewables, and Electric Vehicles, and Integrate these Tools With the Grid; New Solar Home Partnership.

California grid, as well as promote the goals of the California Solar Initiative³ and the goal of twelve gigawatts of distributed energy by 2020 that Governor Brown set out in his Clean Energy Jobs Plan.⁴

- **Storage:** A number of the Strategic Objectives focus on storage.⁵ Improving energy storage capacity and operability will facilitate integration of variable and distributed renewables, as well as advance the mandate set out in AB2514.
- **Electric Vehicles:** Quite a few of the CEC's Strategic Objectives focus on electric vehicles, and especially their integration into the grid.⁶ Integrating EVs into the grid so that they can function as storage and provide grid services will help balance variable renewable generation and level out the ISO's "duck curve."⁷ It will also help advance EV penetration into the California auto market, accelerating the goal of one million EVs within ten years, and the corollary benefits that would bring, as outlined by NRDC and coalition partners in the Charge Ahead California campaign.⁸

IOU Demonstration Projects

During the Joint Workshop of the Proposed 2015-2017 Triennial Investment Plans for the Electric Program Investment Charge Program, the IOUs discussed only the potential demonstration projects that they thought it most likely they would ultimately carry out. These projects also serve the EPIC program's goals – and customers' interest – very well. Some of the projects considered less likely, however, could also provide significant benefits.

³ See Go Solar California, *About the California Solar Initiative*, accessed Mar. 25, 2014, <http://www.gosolarcalifornia.ca.gov/about/csi.php>.

⁴ Governor Edmund G. Brown Jr., Clean Energy Jobs Plan (2010), http://gov.ca.gov/docs/Clean_Energy_Plan.pdf.

⁵ See the following CEC Strategic Objectives: S15.1 Demonstrations of Advanced Energy Storage Technologies in Transmission, Distribution, and Customer Side Applications to Transition to the Commercial Market; S16.1 Demonstrate the Ability of Distributed Electric Vehicles to Provide Grid Services.

⁶ See the following CEC Strategic Objectives: S9.1 Advancing Electric Vehicle Charging and Grid Services to Maximize Renewable Resources and Improve Grid Flexibility; S9.2 Advancing Vehicle-Grid Integration Technologies and Methods for Broader Use and Benefit for Residential, Private, and Public Users; S9.3 Advancing Technologies and Methods to Enable Safe, Efficient, Smart Recycling of Electric Vehicle Batteries; S16.1 Demonstrate the Ability of Distributed Electric Vehicles to Provide Grid Services.

⁷ See, e.g., Jim Lazar, *Teach the Duck To Fly: Integrating Renewable Energy*, Strategy 8: Deploy Electrical Storage, available at <http://www.raponline.org/featured-work/teach-the-duck-to-fly-integrating-renewable-energy>.

⁸ See Roland Hwang, *Charge Ahead California Aims to Put Million Electric Vehicles on Road*, NRDC Switchboard Nov. 14, 2013, http://switchboard.nrdc.org/blogs/rhwang/charge_ahead_california_campai.html.

Southern California Edison

- SCE's most likely project in the category of "Renewables and Distributed Energy Resources Integration" is to "Optimize Control of Multiple Storage Systems." Optimizing aggregated storage will improve performance, both saving customers money and aiding in integration of distributed renewables. By making aggregated storage more cost-effective, this project should increase the types and amount of storage eligible to meet the minimum storage requirements that have been set by AB2514.
- SCE's most likely project in the category of "Grid Modernization and Optimization" is "Versatile Plug-In Auxiliary Power System," which SCE explained was geared towards providing mobile storage such as might be used at a job site. While this is an important technology, we urge SCE to strongly consider "Fast Dynamic Voltage and Frequency Response" and "Advanced Grid Capabilities Using Smart Meter Data," as the first is highly important for integration of renewables and frequently cited as an obstacle to integrating distributed PV, and the second promises enormous energy savings through advanced efficiency measures and demand response, as well as easing integration of renewables.
- Among the "Cross-Cutting / Foundational Strategies & Technologies" SCE is considering, we emphasize the value of "Regional Grid Optimization Demonstration." Regional grid optimization is crucial for integration of renewables,⁹ balancing variability across wider geographic areas to increase predictability and decrease ramping, in turn decreasing the cost of integration and making the ISO's job easier.

Pacific Gas & Electric

- PG&E's most likely "Renewables and Distributed Energy Resources Integration" project appears to be "Evaluating Storage on the Distribution Grid," although slides indicate it may have previously been "Demonstrate Distributed Generation visibility, monitoring & tracking for grid integration." We additionally urge PG&E to raise the priority of the DG visibility project, which will be extremely valuable to integrating renewables and advancing EPIC goals.
- PG&E's most likely "Grid Modernization and Optimization" project is on "Emergency Preparedness Modeling & Emergency Management Mobile Applications." While an extremely important project, we would urge PG&E to strongly consider the proposed project to "Demonstrate the Substation of the Future" or "digital substation," which could make distributed resources visible

⁹ See E3, Investigating a Higher Renewables Portfolio Standard in California (2014), https://ethree.com/documents/E3_Final_RPS_Report_2014_01_06_with_appendices.pdf.

to both PG&E and the ISO, easing integration and making them more valuable and cost effective.

- PG&E's most likely "Customer Focused Products and Services" project involves "Real-time energy usage feedback for customers." This is a valuable project that will help modernize energy efficiency and demand response efforts.

San Diego Gas & Electric

- We especially commend SDG&E for its focus on "Renewables and Distributed Energy Resources Integration" within the "Modernization of Distribution System and Integration of DG/DS" category of projects and for the project on "Integration of Customer Systems into Electric Utility Infrastructure" among its customer-focused projects.
- Although SDG&E has not provided a list of projects that are less likely to be completed, we would like to recommend adding a focus on regional grid optimization much the way SCE plans to.

NRDC again commends the Legislature, the Public Utilities Commission, and the Energy Commission for their leadership and foresight in creating and now implementing the EPIC program. The projects proposed by both the Energy Commission and the IOUs promise large benefits for California citizens, ranging from the size of their monthly bills to the quality of their air. We look forward to working collaboratively to carry this momentum forward.

/s/ Nick Jimenez

Natural Resources Defense Council

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